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January 1964

PHOTOGRAPHIC INTERPRETATION REPORT

DECLASS REVIEW BY NIMA / DoD

SIGINT AND SELECTED OTHER ELECTRONICS SITES IN CUBA



CIA



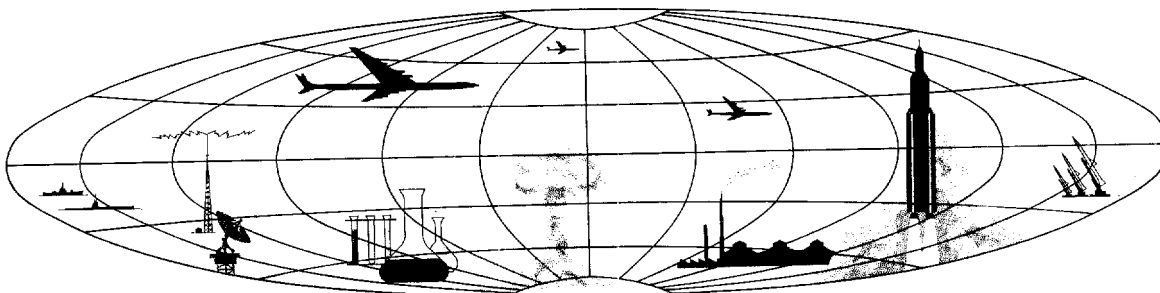
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INTRODUCTION

25X1 A significant Soviet [REDACTED] effort exists in Cuba, and several other electronics systems have reached a substantial magnitude. These other systems include air defense control centers, field radio communications, radar sites, air navigational facilities, and certain non-military electronics. Almost all the military installations examined--whether small units such as certain AAA batteries with FIRECAN or large installations such as airfields--proved to have their own communication capability, this being the case even when the gun battery, SAM site, or radar site was located in a strong electronics environment.

25X1 Since this report was prepared in response to NSA requests for photographic evaluation of suspect [REDACTED] and other specified electronics sites in Cuba, it concentrates primarily on these suggested areas and does not represent com-

plete or exhaustive coverage of the entire island. Nevertheless, initial search of even this sharply limited area revealed such a great variety of antennas and other electronics equipment that it was deemed expedient to report the results under a number of convenient subheadings, within each of which at least one site could be analyzed and presented in maximum detail. The yield obtained by this approach is still more than sufficient to demonstrate that the density of antennas and electronics vans per site substantially exceeds the number previously realized.*

Other than the list of suspect locations, no collateral intelligence has been utilized in this report. Special mention is made of this since conclusions obtained purely from photography need not necessarily coincide with concepts derived from other sources.

SOVIET [REDACTED] SITES

25X1

25X1D Three confirmed and two probable FIX EIGHT sites, as well as a possible FIX FOUR site, have been identified through [REDACTED]
25X1D [REDACTED] All are high-frequency direction-finding (HFD) facilities of Soviet design.

25X1D Although none of these sites had been detected earlier, identification of FIX EIGHT sites at the Holguin (Figure 1) and Remedios military camps on low-altitude photography of [REDACTED]
25X1D [REDACTED] caused certain other areas to be reexamined. As a result, another site was confirmed near Guayabal and probable sites detected at both the Artemisa military camp and the Bejucal military area. Also, a possible FIX FOUR antenna array was observed at the Caraballo radar site.

It is believed that this experience suggests the probable existence of other such sites,

usually not identifiable on high-altitude photography but detectable should further low-altitude photography become available.

*One such subtopic, international communications and broadcast facilities, reached such proportions that it has been issued as a separate report. 1/

**For example, a US Navy photograph [No 710753, captioned "Russian Trawler VEGA on East Coast in April" (UNCLASSIFIED)] of [REDACTED] and ECM vans placed intact on the decks of a Soviet trawler shows that a single SIGINT van may contain medium frequency DF loops, NEPTUNE, WATCH DOG, and yagi-type VHF antennas, while an ECM van may contain three BRICK MOUND/BRICK SQUARE or CHUCK LUCK antennas.

25X1B

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25X1B

pole-mast antennas. A HF field communications site composed of six partially visible electronics vans and three pole-mast antennas is also observed. Temporary living quarters are in two tents under trees.

(S) GUAYABAL

Kind of Site: ☐ - FIX EIGHT

Location: In an open field on the west side of a dual highway (Route 2-2), 0.8 nm SSW of Guayabal and 2.6 nm SSW of Caiman.

Coordinates: 22-54-45N 82-37-18W



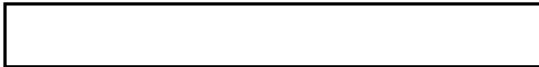
No ☐ associated antennas were detected in the Manzanillo, Soron, Yaguajay, Varadero, Cayo Frances, or Jardines de la Rema areas.

HOLGUIN

Kind of Site: ☐ - FIX EIGHT

Location: In a large open field on the SE perimeter of the Holguin military camp

Coordinates: 20-53-30N 76-13-32W



25X1D

Description (Figure 1): This is a typical Soviet field-transportable FIX EIGHT HF DF installation, with a single electronics van that has a sense antenna on its roof and is surrounded by eight pole-mast antennas. A fenced HF field communications site composed of one visible electronics van and six pole-mast antennas is partially concealed under trees northeast of the FIX EIGHT site. Mobile generators are located approximately midway between the two sites and apparently are a common power supply for both. Temporary living quarters are in a tent near the communications site, but a small, frame, barracks-type building is nearing completion.

Description: A single electronics van is parked on a circular earthen apron. Although this apron is situated in an open field of tall grass that absorbs antenna shadows, it is felt that there is sufficient other evidence to identify this site as a FIX EIGHT HF DF facility. The site is in the environs of a military installation (an AAA park) and therefore further approximates the Artemisa, Holguin, and Remedios FIX EIGHT sites.

ARTEMISA

Kind of Site: ☐ - FIX EIGHT

Location: On the north side of the west end of the Artemisa military camp

Coordinates: 22-51-06N 82-48-50W



REMEDIOS

Kind of Site: ☐ - FIX EIGHT

Location: In a small camp in the SW area of the main Remedios military camp

Coordinates: 22-27-00N 79-35-09W



Description: This is a typical Soviet field-transportable FIX EIGHT HF DF installation, with a single electronics van that has a sense antenna on its roof and is surrounded by eight

Description: A lone electronics van is parked in an open field, thus situated in much the same manner as the FIX EIGHT sites at the Holguin and Remedios military camps. In addition, a probable HF communications site is located at the edge of a nearby woods, and quarters are furnished by a barracks-like building.

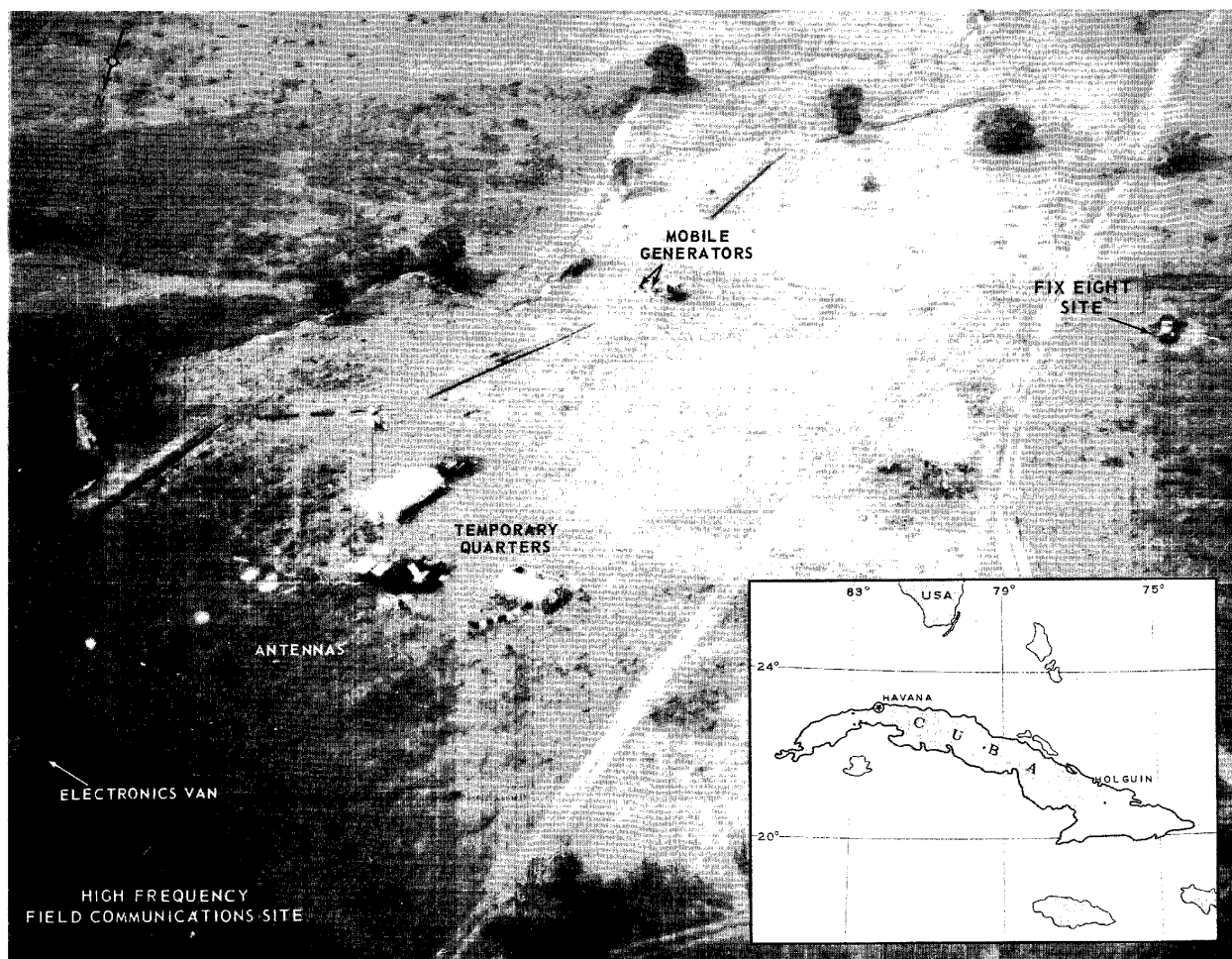


FIGURE 1. SOVIET SIGINT SITE AT HOLGUIN MILITARY CAMP

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BEJUCAL

Kind of Site: ☐ FIX EIGHT (probable)

Location: On a conspicuous hilltop, 0.4 nm NE of the center of Bejucal

Coordinates: 22-55-48N 82-23-00W



Description: A single electronics van is positioned in much the same fashion as at the Holguin and Remedios sites. Three personnel tents on rectangular frames and a HF field communications site are located nearby. (This site is on the same hilltop as a former government administration area of approximately 20 sizable buildings which has been converted to

military use. Three vehicle sheds and approximately 15 military vehicles are observed in the area of the buildings. It is possible, therefore, that this site may be simply a field communications facility in support of the military area.)

CARABALLO

Kind of Site: ☐ FIX FOUR (probable)

Location: In an open field 0.5 nm SE of Caraballo

Coordinates: 23-03-06N 82-54-42W



Description: The probable FIX FOUR HF DF installation is collocated with an EW/GCI radar site (see section on EW/GCI radar sites).

ELECTRONICS AT AAA BATTERIES

Only those AAA batteries that contain gun-laying radar are reported in this study. Most of these contained FIRE CAN, of which the Cojimar East site is a typical example (Figure 2). However, batteries at Mariel Naval Academy and at the Bahia Honda radar site contained only SHEET BEND and SQUARE HEAD, radars normally associated with cruise-missile sites, while the battery at the Remedios military camp contained FLAT FACE, a surveillance radar, and FISH NET, an IFF interrogator, in addition to FIRE CAN.

Communications antennas were present at all the batteries which were examined in detail. These were usually HF radio types, but occasionally included radio relay antennas.

Batteries included in this report without a description of their communications equipment were not examined in detail, although it was evident that they did contain FIRE CAN.

MARIEL

Kind of Site: AAA battery -- SHEET BEND

Location: At the naval academy on the NE edge of Mariel

Coordinates: 22-59-24N 82-45-00W



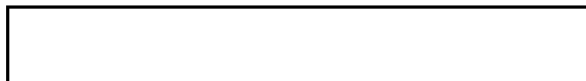
Description: The site contains SHEET BEND and SQUARE HEAD associated with an AAA battery. HF communications antennas include a horizontal wire and a van-mounted whip mast, together with three mobile generators and a utility truck. In addition, there is an R-400 microwave tower with two dish antennas and two attendant vans.

BAHIA HONDA

Kind of Site: AAA battery -- SHEET BEND

Location: 4.1 nm NW of the center of Bahia Honda on the highest hill in the area

Coordinates: 22-58-24N 83-11-30W



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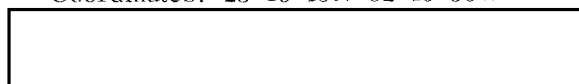
Description: In addition to a FIRE CAN radar, this AAA battery also contains FISH NET, FLAT FACE, and communications vans. All the vans are under canvas with antennas protruding above the tent tops.

COJIMAR EAST

Kind of Site: AAA battery -- FIRE CAN

Location: On the coast 2.1 nm east of the center of Cojimar

Coordinates: 23-10-15N 82-15-30W



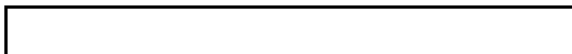
25X1D

REMEDIOS

Kind of Site: AAA battery -- FIRE CAN with others

Location: 0.3 nm SW of the Remedios military camp

Coordinates: 22-27-00N 79-35-15W



25X1D

Description (Figure 2): This is an AAA battery with FIRE CAN radar. A single HF broadband conical monopole communications antenna is identifiable, but other electronics vans of undetermined purpose are also present.

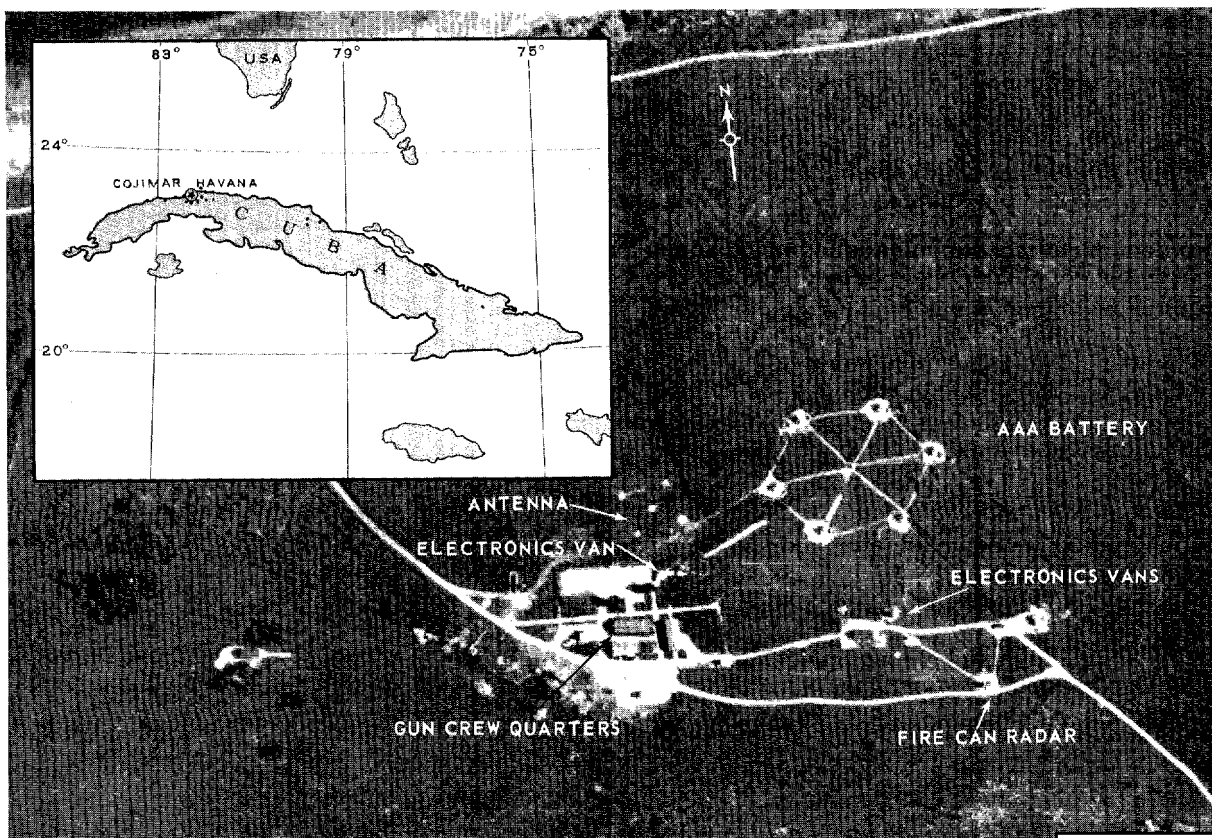


FIGURE 2. AAA BATTERY WITH FIRE CAN RADAR EAST OF COJIMAR

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COJIMAR WEST

Kind of Site: AAA battery -- FIRE CAN

Location: 0.8 nm NW of the center of Cojimar

Coordinates: 23-10-06N 82-18-27W

25X1D

Description: This is a six-gun AAA battery with FIRE CAN radar. The site was not examined for further details.

HOLGUIN

Kind of Site: AAA battery -- FIRE CAN

Location: 0.8 nm north of the NE end of the Holguin Airfield runway

Coordinates: 20-48-36N 76-18-30W

25X1D

Description: This is an AAA battery with a FIRE CAN radar and three communications vans. It was not examined for further details.

ARTEMISA

Kind of Site: AAA battery -- FIRE CAN

Location: On the north side of the principal barracks area at the Artemisa military camp

25X1D

Coordinates: 22-51-06N 82-48-52W

Description: This is a six-gun AAA battery with FIRE CAN radar. It was not examined for further details. However, an R-400 microwave tower was noted within the camp at 22-50-47N 82-48-40W.

SANTA CLARA

Kind of Site: AAA battery -- FIRE CAN

Location: On the SE edge of Santa Clara, just SE of a new by-pass road

Coordinates: 22-23-36N 79-56-45W

25X1D

Description: This site has six occupied AAA emplacements and a FIRE CAN radar; it was not examined for further details.

Location: 1.3 nm SSE of the runway center of Santa Clara Airfield

Coordinates: 22-28-10N 79-56-15W

Description: This is an AAA six-gun battery with FIRE CAN radar and several attendant communications vans.

SANTA FE

Kind of Site: AAA battery -- FIRE CAN

Location: On a mole in the Santa Fe harbor dock area

Coordinates: 23-05-12N 82-30-09W

Description: This is a six-gun AAA battery with FIRE CAN radar. It was not examined for further details.

HAVANA AREA

Kind of Site: AAA battery -- FIRE CAN

Location: On the seawall at Punta Sotavento, 3 nm east of Santa Fe in the western environs of Havana

Coordinates: 23-05-48N 82-27-48W

Description: This is a six-gun AAA battery with colocated FIRE CAN radar that was not examined for further details.

Location: In the SW environs of Havana, 1.2 nm SE of Mariacao and just north of the Central Toledo Railroad Station

Coordinates: 23-03-36N 82-25-06W

Description: This site contains a six-gun AAA battery with FIRE CAN radar and two other vans, all in reverments.

Location: In an open field 3.9 nm SSW of the center of Havana harbor

Coordinates: 23-04-24N 82-22-12W

Description: This site contains FIRE CAN radar colocated with a three-gun AAA battery.

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Revetments exist in a circular pattern for three more guns, but are not occupied.

Location: On the NW edge of a military barracks and field artillery encampment in the SSE Havana area, 2.6 nm east of Santiago de las Vegas and 2.8 nm west of Managua

Coordinates: 22-58-12N 82-20-30W

Description: This is a six-gun AAA battery with FIRE CAN radar. It was not examined for further details.

Location: In the SSE suburbs of Havana, just north of a dual highway

Coordinates: 23-02-15N 82-20-10W

Description: This is a six-gun AAA battery with the guns in revetments. Cable scars lead to

FIRE CAN and other fire-control devices in revetments.

Location: In an open field just east of Mantilla, 3.6 nm south of the center of Havana harbor

Coordinates: 23-04-10N 82-19-50W

Description: The site contains a FIRE CAN radar colocated with a six-gun AAA battery; it was not examined for further details.

Location: On a ridge 6.8 nm ESE of Guana-
bacoa in the SE environs of Havana

Coordinates: 23-05-30N 82-11-06W

Description: This is a six-gun AAA battery with a FIRE CAN radar in a revetment on the northwest perimeter of the site.

EW/GCI RADAR SITES

All the early warning and ground controlled intercept (EW/GCI) sites examined for this report have their own communications equipment, even where they are located near or with other installations which have already established communications facilities.

The Limonar EW/GCI site (Figure 3) is a typical example. This site is located only 1.5 nm from the Limonar field communications center, the second largest in Cuba. Although it would appear that the nearby communications concentration could adequately serve the needs of the radar site, it nevertheless has its own separate communications equipment. This same general practice is followed at all other sites reported in this study.

LIMONAR

Kind of Site: EW/GCI radar

Location: 2.1 nm SW of the center of Limonar and 1.5 nm west of the Limonar field communications center

Coordinates: 22-55-48N 81-26-33W

Description (Figure 3): The radar site contains BAR LOCK, STONE CAKE, SPOON REST, KNIFE REST, and FISH NET. A field communications site is situated 0.3 nm north-northwest of the radar site. It is composed of 4 electronics vans, 2 conical monopole broadband vertical radiators, 3 generators, and 3 small quarters buildings. An adjacent support area contains one building and approximately 15 scattered tents.

CIEGO DE AVILA

Kind of Site: EW/GCI radar

Location: 2.1 nm NNW of the center of Ciego de Avila

Coordinates: 21-52-09N 78-46-18W

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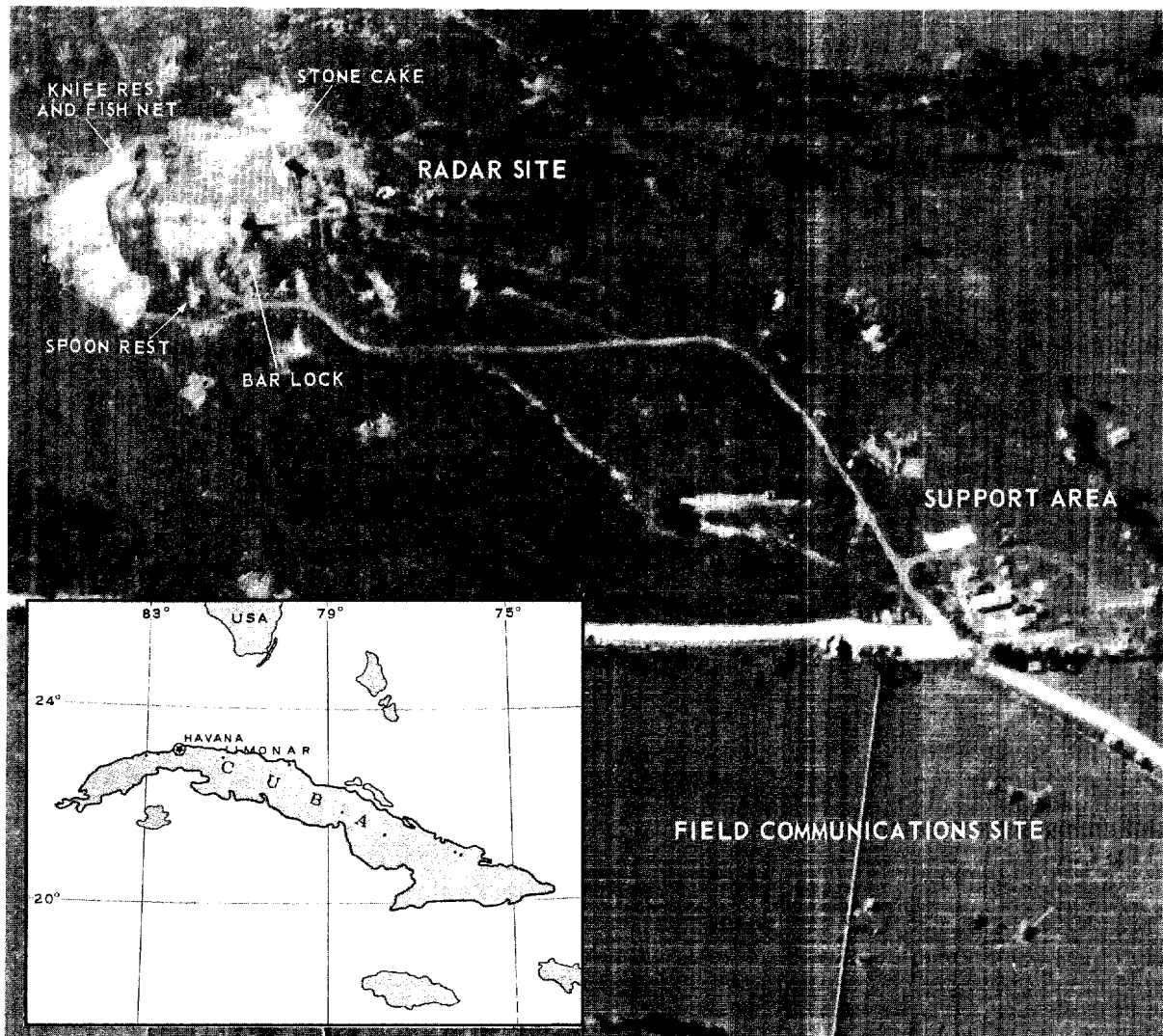


FIGURE 3. EW/GCI RADAR SITE NEAR LIMONAR.

25X1D

25X1

Description: The radar site contains BAR LOCK, FLAT FACE, and STONE CAKE, situated on mounds. In addition, a SPOON REST is on a canvas-covered van with a SCORE BOARD on the ground next to it. A KNIFE REST and a FISH NET are sited by two vans near the BAR LOCK. Eight other vans are present. A field communications site is across the road to the rear of a housing area. It contains 7 vans, one with MERCURY GRASS, 4 with HF masts, and 2 with

unidentified antennas, possibly VHF DISC CONE. The radar site and communications site are colocated with a vehicle park and a housing/administration area that contains more than 20 large buildings.

BAHIA HONDA

Kind of Site: EW/GCI radar

Location: 4.5 nm NW of the center of Bahia Honda, on the highest hill in the area

Coordinates: 22-58-24N 83-11-30W

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25X1

25X1D



Description: The radar site contains SPOON REST, KNIFE REST, FISH NET, and a probable FLAT FACE. In addition, there are two IIF communications vans and several other canvas-covered vans. All equipment is in revetments. The site is supported by a T-shaped mess/recreation building, 4 barracks-type buildings, 3 large tents, and several sheds. An AAA battery is located adjacent to the radar site (see section on AAA batteries).

CARABALLO

Kind of Site: EW/GCI radar

Location: In an open field 0.5 nm SE of Caraballo

Coordinates: 23-03-06N 82-54-42W

25X1D



Description: The site is composed of radar vans in trenches and shallow, excavated areas, with two HF communications vans located above ground at the southwest corner of the site. Although individual components are not identifiable, the site closely resembles the one at Bahia Honda, for which low-level photography is available and the components are known.

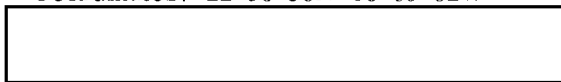
SAGUA LA GRANDE

Kind of Site: EW/GCI radar

Location: 0.5 nm ESE of the Sagua la Grande SAM site

Coordinates: 22-50-50N 80-05-02W

25X1D



Description: The site has two elevated positions which contain TOKEN, STONE CAKE,

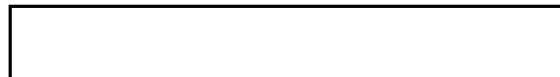
FISH NET, and KNIFE REST. An adjacent IIF field communications site contains four vans.

CHAPARRA

Kind of Site: EW/GCI radar

Location: 3.5 nm SE of Chaparra

Coordinates: 21-07-00N 76-26-00W



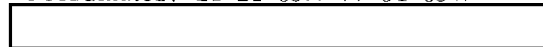
Description: This EW/GCI site contains SPOON REST, FLAT FACE, and KNIFE REST, together with a MERCURY GRASS antenna. In addition, a FISH NET is operating in conjunction with an adjacent IIF field communications site composed of pole and horizontal-wire antennas and two electronics vans.

CAMAGUEY

Kind of Site: EW/GCI radar

Location: 4.4 nm SE of the center of Camaguey, just south of the Camaguey military concentration area

Coordinates: 21-21-05N 77-51-05W



Description: The site is composed of a probable BAR LOCK (or TOKEN), SPOON REST, FLAT FACE, KNIFE REST, FISH NET, and several attendant vehicles. Revetments are under construction and nearing completion for the BAR LOCK, SPOON REST, and FLAT FACE. A group of four electronics vans of the type that usually contain IIF antennas is located approximately 400 yards south of the site. Also, a Soviet R-400-type tower with three dish antennas is located in the center of a circle of vans and electronics vehicles approximately 400 yards northeast of the radar site. Since this type of antenna is normally attended by only two vehicles, it is presumed that other IIF antennas of the mast or wire type are present. A mobile IIF communications site composed of four vehicles with whip-mast antennas is located approximately 200 yards south of the R-400 site.

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HOLGUIN

Kind of Site: EW/GCI radar

Location: On knob of hill, 2.4 nm NE of the center of Holguin

Coordinates: 20-54-56N 76-13-36W

Description: Although the components of

this site are not positively identifiable due to obliquity, tentative appraisal suggests TOKEN, ROCK CAKE, KNIFE REST, FISH NET, and a possible SPOON REST. A support area contains a single large building, three large tents, a utility building, and several vans.

25X1D

COMMUNICATION FACILITIES AT SAM SITES

Five representative SAM sites in Cuba--San Julian, Mariel, Sancti Spiritus, Esmaralda, and Chaparra--were reexamined with particular interest in their communications facilities. All these sites had either Soviet R-400 or MERCURY GRASS antennas and, in addition, some form of HF radio backup.

For example, San Julian had a MERCURY GRASS antenna within the SAM site outer road. In the support area outside the road were two whip-mast HF antennas on electronics vans, a horizontal-wire antenna, and a HF broadband conical monopole antenna located by a van somewhat isolated from the whip-mast and wire antennas. Mariel SAM site had a MERCURY GRASS and a conical monopole, and the same situation existed at Sancti Spiritus. Esmaralda had a Soviet R-400 antenna with two dishes and HF backup.

It is important to note that complete low-level photographic coverage is not available for these sites and that, therefore, other communications antennas possibly exist which are not identifiable. The examples selected, however, have a sufficient yield of antennas to indicate that SAM sites are similar to the AAA batteries and EW/GCI radar sites in having their own communications even when located near other existing facilities. The San Julian SAM site, for example, is located in the environs of San Julian Airfield which has seven separate areas of HF communications of its own (see section on airfields).

Because the Cuban SAM sites have been adequately covered in other reports, it was not felt necessary to include any detailed descriptions or illustrations.

ELECTRONICS SITES AT AIRFIELDS

Four of the five airfields presented in this study, Santa Clara (Figure 4), San Julian, Camaguey, and San Antonio de los Banos, contain a density of radar and communications sites which substantially exceeds that of other Cuban airfields, and they are therefore considered to be Air Defense Control Centers. This conclusion is derived from photography alone, based on the types and numbers of electronics components detected. The fifth airfield, Holguin, is representative of Cuban airfields in general, in which

the overall electronics environment is much less developed.

SANTA CLARA AIRFIELD

Location (runway center): 5.5 nm NNE of the center of Santa Clara

Coordinates (runway center): 22-29-18N 79-56-30W

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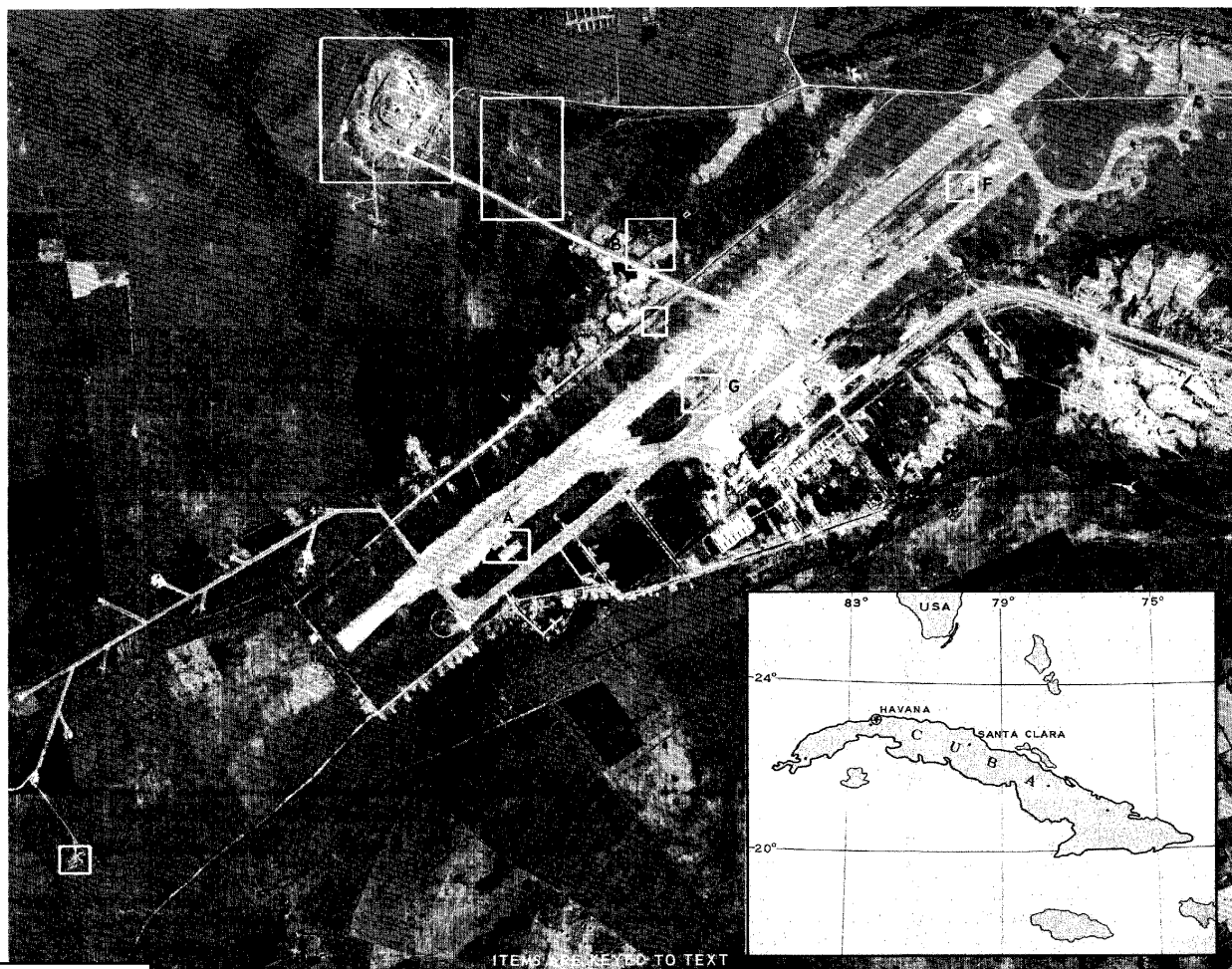


FIGURE 4. ELECTRONICS SITES AT SANTA CLARA AIRFIELD.

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Electronics Sites: (Letters keyed to Figure 4):

EW/GCI Radar (item A)

Location: between runway and taxiway at west end of airfield

Coordinates: 22-29-36N 79-56-36W

Description: The site contains one MERCURY GRASS antenna on a ground-mounted mast, one DISC CONE antenna on a van, one van-mounted whip-mast HF communications antenna, one probable FLAT FACE protruding through the canvas of a tent-covered van, and 3 camouflaged electronics vans cable-connected to junction boxes and diesel-electric generators.

EW Radar (item B)

Location: 0.3 nm NNE of runway center

Coordinates: 22-29-42N 79-56-24W

Description: The site contains a van-mounted FLAT FACE; 2 FISH NET, each with a van; 2 KNIFE REST antennas, one with a van; a STONE CAKE; a van-mounted whip-mast HF communications antenna; 2 generators; 3 prime movers; and 2 operations control vans.

EW/GCI Radar (items C, D, and E)

Location: three groups of antennas centered 0.5 nm north of the runway center

Coordinates (center group): 22-29-54N 79-56-36W

Description: The identification of these antennas is tentative because two of the groups are canvas-covered, and all lack low-level photographic coverage. Probable components include a canvas-covered SPOON REST, a canvas-covered FLAT FACE, a ROCK CAKE, and two communications vans with HF antennas. In

addition, one site has two canvas-covered vehicles and another has three.

ECM Passive Detection (item F)

Location: between runway and taxiway at the east end of the airfield

Coordinates: 22-29-30N 79-55-30W

Description: The site contains a canvas-covered CHEESE BRICK, a canvas-covered unidentified van, and a small tent.

Field Communications (item G)

Location: between runway and taxiway near midfield

Coordinates: 22-29-18N 79-56-18W

Description: The identification of the components of this site is tentative as no low-level photography is available. However, there are 3 communications vans, 2 generators, 3 small tents, and probable DISC CONE VHF and whip-mast HF antennas.

Field Communications (item H)

Location: near runway on north-central side of field

Coordinates: 22-29-30N 79-56-24W

Description: This site contains two electronics vans and a small tent. In addition, there are probably HF whip-mast communications antennas mounted on the vans.

Air Defense Filter Center and Radar (item I)

Location: the filter center is located at the base of, and the radar site on top of, a conspicuous hill (Loma Pelada) 0.9 nm NNW of the runway center

Coordinates: 23-00-12N 79-56-58W

Description: The radar site contains BAR LOCK, STONE CAKE, and SCORE BOARD. Cables lead from this site to the base of the hill where there are 4 buildings, a large tent and 3 small tents, and a diesel-electric generator, all interconnected by additional cables.

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Inner-marker Beacon (item J)

Location: 0.3 nm west of the western end of the runway

Coordinates: 22-29-00N 79-58-03W

Description: The site contains a IIF inner-marker beacon with a van; 2 unidentified antennas on masts, possibly SMALL CROSS; and one van with a raised, lantern-configured device on the rear--probably distance measuring equipment (DME) of a type not specifically classified. (This device is also present at the Holguin and San Antonio de los Baños inner-marker beacons, but prior to this has only been noted at Playa Baracoa (Havana) Airfield.)

Other Sites in the Santa Clara Area (not illustrated):

AAA batteries with FIRE CAN radar - 2 (see appropriate section)

Microwave relay tower (see section on miscellaneous antennas)

SAN JULIAN AIRFIELD

Location: approximately 5 nm SW of Mendoza at the western end of the island

Coordinates: 22-06N 84-09W

Electronics Sites:

EW/GCI Radar

Location: on the west side of the field just north of the barracks area; colocated with Communications Sites No 1 and 2

Coordinates: 22-06-18N 84-09-18W

Description: The site contains BAR LOCK, FLAT FACE, SPOON REST, STONE CAKE, and a probable BOX BRICK. The latter component is on the corner of a small building and is attended by two canvas-covered vehicles.

Communications No 1 (field)

Location: on the west side of the field just north of the barracks area; colocated with the EW/GCI site above

Coordinates: 22-06-18N 84-09-18W

Description: This is a IIF communications site in support of a radar site, as discussed in detail in the section on EW/GCI radar sites. The site contains 6 canvas-covered vans and 3 generators under shed-roof shelters. In addition, there are 2 horizontal-wire antennas, one conical antenna with counterpoise, and 8 other poles and masts which are probable whip-mast or horizontal-wire antennas.

Communications No 2 (field)

Location: colocated with the radar and communications sites above

Coordinates: 22-06-18N 84-09-18W

Description: This site is separately fenced but located just to the southeast of Communications Site No 1, above. It contains 12 electronics vans, 5 generators, and an undetermined number of pole-mounted vertical-radiator and horizontal-wire IIF antennas.

Communications No 3 (field)

Location: in the middle of the barracks area on the west side of the airfield

Coordinates: 22-06-03N 84-09-30W

Description: The components of this site appear to be the same as those at the Limonar and Havana Communications Centers. The site contains 24 electronics vans and 6 diesel-electric generators. Antennas, however, are not individually identifiable as no low-level photographic coverage is available.

Communications No 4 (field)

Location: just east of the large, centrally located parking apron

Coordinates: 22-06-00N 84-09-18W

Description: This facility is just east of Communications Site No 3, above, and may be an

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25X1

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adjunct of it, as are similar facilities at the Limonar and Havana Communications Centers which have add-on or adjacent-but-isolated vans near the principal body of vehicles.

Communications No 5 (field)

Location: in the middle of the barracks area on the west side of the field, but SW of Site No 3, above.

Coordinates: 22-05-58N 84-09-40W

Description: The site contains electronics vans in a deployed arrangement, the number varying from 5 to 17 on successive missions. The number and types of antennas are not determinable from available photography.

Communications No 6 (field)

Location: on the south side of the westernmost third of the WSW/ENE runway

Coordinates: 22-05-30N 84-10-00W

Description: This site contains two self-powered electronics vans, each with a whip-mast HF antenna.

Base Operations Communications

Location: on and by the base operations building which is just to the west of the centrally located parking apron

Coordinates: 22-06-03N 84-09-27W

Description: The roof of the base operations building contains one VHF antenna, one whip-mast HF antenna, and approximately 2 other unidentified antennas. These antennas have been augmented by field equipment which includes 2 van-mounted DISC CONE, an HF whip-mast antenna, and 7 vans and 4 generators serving a horizontal-wire HF antenna and 3 pole-mounted vertical radiator HF antennas. Three other electronics vans are being held in reserve.

Ground Controlled Approach (GCA)

Location: midway between the NNE/SSW

runway and the housing/warehouse area on the west side of the runway

Coordinates: 22-05-48N 84-09-21W

Description: The site contains a van-mounted precision approach radar (PAR) HOME TALK with SMALL CROSS, a HF communications van with a whip-mast antenna, a CROSS FORK radar, 2 VHF DISC CONE, 2 control vans, and a generator.

SA-2 SAM Site No 1

Location: 0.4 nm SE of the intersection of the two runways

Coordinates: 22-05-27N 84-08-50W

Description: A MERCURY GRASS antenna is observed within the SAM site outer road. A conical umbrella antenna with van, a horizontal-wire HF antenna, and two whip-mast HF antennas on vans are observed in the support area.

CAMAGUEY AIRFIELD

Location: approximately 4 nm ENE of the center of Camaguey

Coordinates: 21-25N 77-51W

Electronics Sites:

EW/GCI Radar

Location: 0.6 nm NE of the NE end of the NE/SW runway

Coordinates: 21-25-36N 77-50-09W

Description: The site contains a BAR LOCK - STONE CAKE combination, a SPOON REST - ROCK CAKE combination, a HF communications van with a whip-mast antenna, 4 generators, 3 prime movers, and 12 electronics vans of unidentified types.

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25X1

Communications No 1

Location: just north of the midpoint of the
NE/SW runway

Coordinates: 21-25-10N 77-51-20W

25X1D

Description: Seventeen guyed lattice antenna towers are located in a random fashion around a centrally located communications building. Some of the towers support horizontal wires and others constitute directive-array vertical radiator antennas. Four of the towers, approximately 45 feet high, are sited at the corners of the central control building and have the typical appearance of an Adcock array except that they form a rectangle rather than a square. Also, inasmuch as the array is located in a field of other antennas, its function as a DF device is doubtful.

Communications No 2 (field)

Location: on the south side of the SW end
of the principal runway

Coordinates: 21-24-54N 77-51-27W

25X1D

Description: The site contains a DISC CONE VHF antenna and a HF whip-mast antenna protruding above a canvas-covered van. A mobile generator is located just to the northwest.

Communications No 3 (field)

Location: just south of the NE end of the
principal runway

Coordinates: 21-25-06N 77-50-48W

25X1D

Description: The site consists of one communications van with three stick- or pole-mast HF antennas.

Communications No 4 (meteorological tower)

Location: near the base operations control building on the north side of the runway at midfield

Coordinates: 21-25-15N 77-51-10W

25X1D

Description: An IIF array consisting of two guyed lattice antenna towers is colocated with a self-supporting tower having a windsock and meteorological platform.

GCA

Location: just south of the runway near
midfield

Coordinates: 21-25-03N 77-51-00W

25X1D

Description: This is a typical Soviet GCA navigational system composed of a PAR-van IHOME TALK with SMALL CROSS, a CROSS FORK, a DISC CONE VHF communications antenna, a generator, and two control vans.

Van Parking Area No 1

Location: just north of the SW end of the
principal runway

Coordinates: 21-25-00N 77-51-36W

25X1D

Description: The site consists of 9 non-deployed electronics vans and 6 generators parked under nettings. No antennas have been erected but one of the generators is connected by cable to the runway lights.

Van Parking Area No 2

Location: 0.7 nm NE of the NE end of the
NE/SW runway, adjacent to the EW/GCI radar site

Coordinates: 21-25-39N 77-50-09W

25X1

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25X1

25X1D



Coordinates: 22-52-06N 82-30-18W



Description: The site consists of a circular compound containing approximately 30 non-deployed electronics vans, some 16 of which have generators or trailers. Many of the vehicles are under canvas covers, and no antennas are visible. A variety of non-electronics vehicles is also parked in the area.

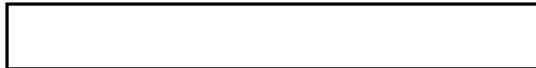
Description: The site contains one TOKEN with 4 attendant vans; a SPOON REST; 2 KNIFE REST, each with a van; 2 FISH NET, each with a van; a FLAT FACE; a SCORE BOARD; a STONE CAKE; 2 mobile HF communications vans on the northwest perimeter; and approximately 4 tent-covered HF communications vans with assorted antennas.

25X1D

Stellar Observatory

Location: on the north side of the field along the NE third of the taxiway

Coordinates: 21-25-21N 77-50-54W

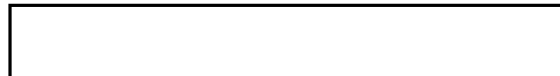


Description: Two guyed lattice masts are ground mounted near a building with a small astrodome on its roof.

Communications No 1

Location: between runway and taxiway at the SW end of the NE/SW runway

Coordinates: 22-51-42N 82-31-36W



Description: A control tower at this location has three whip-mast antennas on its roof.

25X1D

Other Sites in the Camaguey Area:

EW/GCI radar (see section on EW/GCI radar sites)

Radio broadcast and microwave towers: at least six radio broadcast towers were observed in the outskirts of Camaguey. In addition, a Cuban microwave tower of the RCA two-dish type was noted in the southeast environs of the city.

Communications No 2

Location: near the midpoint of the NE/SW runway

Coordinates: 22-51-48N 82-31-00W



Description: Four guyed lattice towers of no particular geometric arrangement have horizontal wires strung between them that constitute what appears to be a HF cage-dipole antenna system.

25X1D

SAN ANTONIO DE LOS BANOS AIRFIELD

Location: Just SW of San Antonio de los Banos

Coordinates (runway intersection): 22-52-18N 82-30-30W

Electronics Sites:

EW/GCI Radar No 1

Location: slightly south of the midpoint of the eastern side of the field

Communications No 3 (field)

Location: between runway and taxiway near the prominent parking apron of the NE/SW runway

Coordinates: 22-52-06N 82-30-48W



25X1D

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25X1

SECRET

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25X1

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Description: The site contains two probable DISC CONE VHF communications vans, and a probable SMALL CROSS antenna.

Inner-marker Beacon

Location: in direct alignment with the NE/SW runway, 0.7 nm off the SW end
Coordinates: 22-51-15N 82-32-06W

25X1D

Description: The site contains a camouflaged probable DISC CONE VHF antenna. In addition, there is a van with a raised, lantern-configured device on the rear--probably DME of a type not specifically classified. (This device is also present at the Holguin and Santa Clara inner-marker beacons, but prior to this has only been noted at Playa Baracoa (Havana) Airfield.

25X6

Outer-marker Beacon

Location: in direct alignment with the NE/SW runway, 2 nm (12,500 feet) off the SW end
Coordinates: 22-50-30N 82-33-18W

25X1D

Description: Three areas of components are aligned in a general northeast/southwest line, containing altogether substantially more components than are normally found at an outer-beacon site. The facility farthest to the southwest contains two generators and two vans arranged in a perfect rectangular pattern. Ten cable scars of varying lengths radiate outward to antennas of unidentifiable types. The central area contains a typical Soviet outer-marker beacon facility: a single van with a horizontal-wire dipole over a buried radial ground system. The northeastern facility contains a probable

SMALL CROSS antenna on a van plus another van and generator with approximately three antennas of unidentifiable types. There are also three tents on rectangular frames.

HOLGUIN AIRFIELD

Location: 2.9 nm north of San Pedro de Cacocum and approximately 7.5 nm SW of Holguin
Coordinates (runway center): 20-47-06N 76-19-06W

25X1D

Electronics Sites:

EW/GCI Radar

Location: 0.4 nm north of the NE end of the runway and just north of the Holguin military concentration area

Coordinates: 20-48-24N 76-18-09W

Description: This site is divided into two areas: one contains a TOKEN with 4 vans, a KNIFE REST and a FISH NET, both on vans; the other contains a SPOON REST on a van in an excavation, a SCORE BOARD IFF, and a mobile communications facility that includes 3 vans, a generator, a van-mounted HF communications antenna, a horizontal-wire antenna, and a probable MERCURY GRASS antenna.

Communications

Location: just off the NE end of the runway
Coordinates: 20-47-48N 76-18-12W

Description: The site consists of a DISC CONE VHF communications antenna and a whip-mast antenna, both van mounted.

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GCA

Location: between runway and taxiway at the SW end of the field

Coordinates: 20-46-45N 76-19-30W

Description: The site consists of a PAR-van HOME TALK with SMALL CROSS, a CROSS FORK radar with two vans, 3 DISC CONE VHF communications antennas on vans, a van-mounted whip-mast HF antenna, and 3 generators.

Inner-marker Beacon

Location: 800 yards off the SW end of the runway

Coordinates: 20-46-15N 76-20-00W

Description: The site contains a DISC CONE VHF communications antenna with a generator,

a horizontal-wire inner-marker beacon over a ground counterpoise with an attendant van and generator, and a VHF communications van with a van-mounted whip-mast antenna. There is also a van with a raised lantern-configured device mounted on the rear, similar to devices noted earlier in this report at Santa Clara and San Antonio de los Banos Airfields.

Other Sites in the Holguin Area:

SIGINT -- FIX EIGHT facility (see appropriate section)

AAA battery with FIRE CAN radar (see appropriate section)

EW/GCI radar site (see appropriate section)

FIELD COMMUNICATIONS CENTERS

Relatively extensive field communications sites, or centers, apparently exist in numbers not previously realized. Two such centers, the Havana Communications Center at Torrens (Figure 5) and the Limonar Communications Center at the Limonar Military Camp, as well as the sizable field communications concentration at San Julian Airfield, were positively identified during the course of this search. In addition, such centers apparently exist at Camaguey, San Antonio de los Banos, and Santa Clara Airfields (see airfield section), but on a somewhat smaller scale.

Although the exact function of these so-called centers cannot be determined from photography, it seems reasonable to presume that they act as central collection points for deployed field units--AAA batteries, SAM sites, EW/GCI radar sites, etc.--which have their own communication relay facilities as detailed in other sections of this report. Further, since all the centers are colocated with a sizable military area where decision-making could take place, the

centers could very well serve as links in the international command system. 1/ As the need arises, these arrangements may be supplemented by other nets, such as the Soviet R-400 system. 2/

Exactly what components constitute a field communications center remains partially a matter of conjecture because complete, good-quality, low-level photographic coverage is not available for any one of the concentrations. Some antennas have been visible from time to time, and it is apparent that high frequency broadband conical monopoles predominate. However, horizontal-wire and whip-mast antennas as well as rhombics have been seen at Torrens. The approximate number of electronics vans ranges from around 25 at the larger centers down to as few as eight at the smaller. Usually at least three generators can be seen. Personnel quarters may be on-site, as at Torrens, or may be furnished at nearby military installations, as is the case at Limonar.

25X1

TORRENS AREA

Location: in the SW suburbs of Havana,
surrounding the Torrens reformatory

25X1D

Field Communications Sites

Site No 1

Location: 0.5 nm SSW of the main building
of the Reformatory

Coordinates: 22-59-06N 82-28-06W

25X1D

Description: The site contains electronics equipment concealed under four tents. Some single pole masts identify the site as a communications facility. Scars in an adjacent field indicate the probable existence of rhombic antennas, approximately two of which could be accommodated.

Site No 2

Location: 2.2 nm NNE of the Reformatory
and one nm SE of El Cano

Coordinates: 23-01-24N 82-26-42W

25X1D

Description: This is a field-transportable facility composed of four tent-covered electronics positions arranged in a random fashion. Antennas protrude from the tents, but types are not identifiable. At least three of the positions have adjacent standby generators. The site was

25X1D

Site No 3 (Havana Communications Center)
Location: 2.2 nm NE of Torrens Reformatory and 3.2 nm west of Calabazar
Coordinates: 23-00-48N 82-25-48W



25X1D

Description (Figure 5): The Havana Communications Center, a field transportable site, contains a minimum of six guyed broadband conical HF antennas and others, on canvas-covered vans, which are not identifiable as to number or type. The antennas are deployed in a random fashion and supported by nine separate groups of canvas-covered electronics vans. In addition, there are 24 electronics vans not under canvas. Eleven barracks-type buildings in the area indicate that the site is constantly manned.

Site No 3-A

Location: 0.5 nm west of Site No 3, and just east of El Chico

Description: This site is smaller but similar to No 3, above, containing an undetermined number of vehicles under trees and canvas covers. Only one antenna can be perceived, a rectangular array of six pole masts.

Site No 4

Location: 1.2 nm south of the main Reformatory building

Coordinates: 22-58-24N 82-28-06W

25X1D

Description: This is a small site consisting of one small and two large tents covering approximately six communications vans. It is positioned at the edge of an open, fenced playground where there is adequate room for rhombic antennas to be deployed.

25X1

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25X1

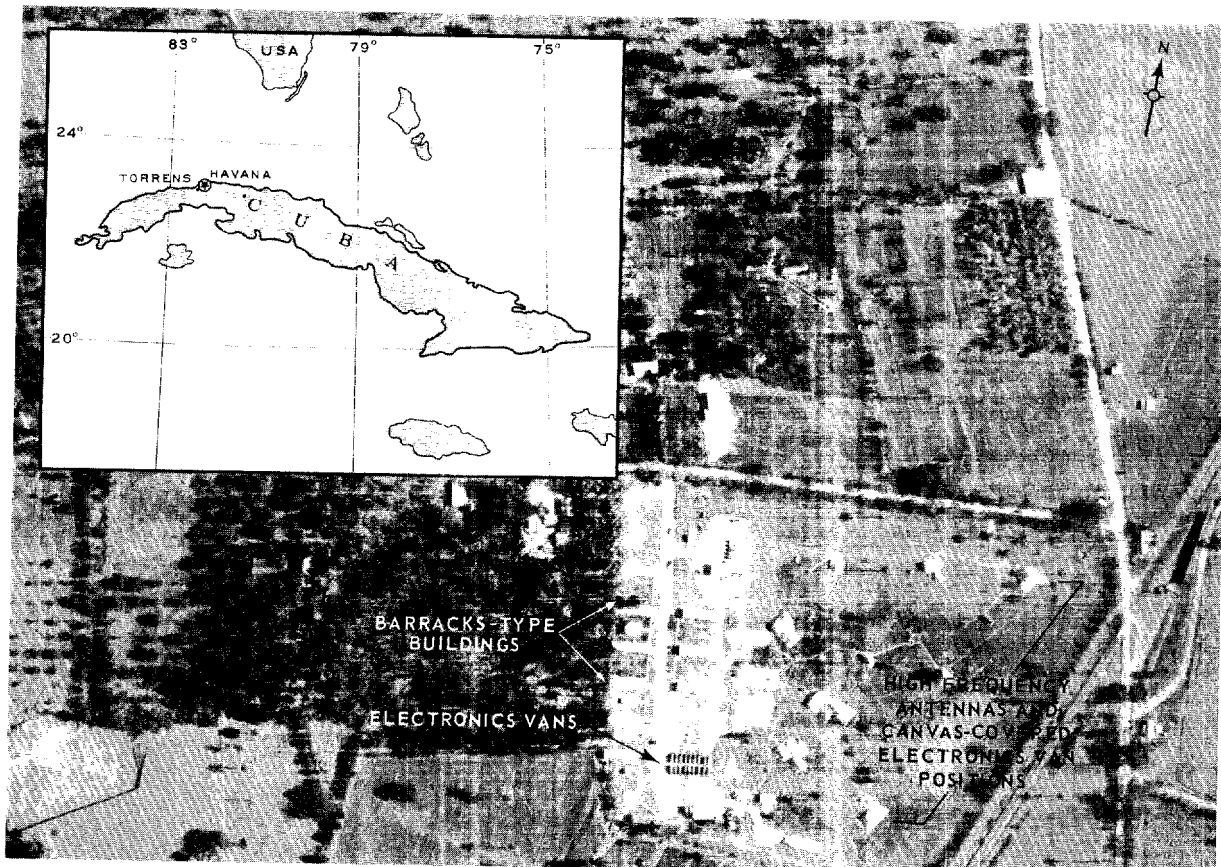


FIGURE 5. SITE NO 3 (HAVANA COMMUNICATIONS CENTER) NEAR TORRENS

Site No 5

Location: 2 nm south of the main Reformatory building

Coordinates: 22-57-48N 82-28-00W

Coordinates: 22-59-33N 82-28-03W

Description: The site consists of six deployed communications vans and approximately four generators. The types of antennas are not able to be determined.

LIMONAR

Kind of Site: Field communications

Location: 1.1 nm SSW of the center of Limonar and 0.6 nm west of Limonar Military Camp; the Limonar EW/GCI radar site is 1.5 nm to the west

Coordinates: 22-56-00N 81-25-00W

Description: The site consists of approximately two canvas-covered electronics vehicles on the western edge of a tent camp and vehicle park. Antenna types are not able to be determined, but the site has the appearance of a communications rather than a radar facility.

Site No 6

Location: just SW of the main Reformatory building

SECRET

25X1

Description: This is the second largest field communications center detected in Cuba to date, exceeded only by the Havana Communications Center (Torrens Site No 3). The site is composed of 4 tent-covered vans, 25 exposed vans, 4 small tents, and several diesel-electric gen-

erators, all parked on improved earthen aprons and neatly arranged in parallel rows. Except for four broadband conical monopoles, the antennas are not individually identifiable. Twelve additional electronics vans are located at the nearby Limonar Military Camp.

MISCELLANEOUS ANTENNAS

Radio and television antennas for local broadcasting together with microwave and other antennas, some of which predate the Cuban crisis, were observed in several of the search areas. Since these have no significant bearing on the [redacted] or military electronics posture of Cuba, they are here reported summarily by geographic location without further comment.

CIEGO DE AVILA

Kind of Site: Radio broadcast antennas

Description: The following radiobroadcast towers were observed in and around Ciego de Avila. The first four are guyed vertical radiators, and the last is self-supporting.

1. 21-51-06N 78-47-21W
2. 21-50-42N 78-46-39W
3. 21-50-42N 78-46-30W
4. 21-50-48N 78-46-00W
5. 21-50-18N 78-45-39W

COJIMAR

Kind of Site: Radio relay and broadcast station

Location: on the coast 0.9 nm NW of the center of Cojimar

Coordinates: 23-10-03N 82-18-42W

Description: The site consists of a fenced area containing a very tall vertical radiator and, under construction, approximately five receiving fishbone antennas of the international communications type. A central control building and two utility buildings are located at the center

of the antenna field. The very tall tower was observed under construction on [redacted] but the balance of the antennas and their transmission lines were not present at that time.

HAVANA AREA

Kind of Site: Radio broadcast station

Location: in the SW Havana suburbs at the bottom of a stream-course south of the Havana Military Academy

Coordinates: 23-03-42N 82-28-42W

Description: The site contains two guyed steel lattice towers approximately 250 to 300 feet high, each with a tuning cabin at its base. A small transmitter/studio building is just east of the antennas.

Kind of Site: Radio broadcast station

Location: in the SW Havana suburbs just SW of San Agustin

Coordinates: 23-03-03N 82-28-30W

Description: The site contains five self-supporting steel lattice towers approximately 450 feet high. Two towers are aligned in a north-west/southeast direction, and two others, very close together, are aligned northeast/southwest; the fifth stands alone. There is a tuning house at the base of each tower, an antenna coupler at the hub, and a large studio/transmitter building on the grounds nearby.

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25X1

Kind of Site: Television broadcast tower

Location: on the grounds of Ampliacion de Arroyo Arenas just north of El Cano in the SW suburbs of Havana

Coordinates: 23-02-30N 82-27-24W

25X1D

Description: The site contains a very high (approximately 1,100 feet) guyed steel lattice tower with an enlarged area at its top which suggests television antenna elements. There is a large studio-type building at the base of the tower.

Kind of Site: Television broadcast tower

Location: on the southern side of the National Hotel which is just east of Punta Brava on the Havana seashore west of the harbor entrance

Coordinates: 23-08-25N 82-22-40W

25X1D

Description: The site contains a very tall self-supporting tower with an omnidirectional vertical television broadcast antenna atop the mast.

Kind of Site: Radio broadcast antenna

Location: in the yard behind a large governmental-type building in downtown Havana, just SW of the Plaza de la Republica

Coordinates: 23-06-56N 82-23-24W

25X1D

Description: This site, a vertical radiator antenna, consists of a self-supporting steel lattice tower that is round and tapers into a cone-shape several hundred feet high.

Kind of Site: Radio broadcast station

Location: 3.9 nm SW of the center of Havana harbor, just NW of the Naranjito subdivision

Coordinates: 23-04-48N 82-23-12W

Description: The site consists of a tall (approximately 450 feet) self-supporting steel lattice antenna tower, with a nearby second footing for a similar tower which was either never built or has been dismantled. A transmitter/studio building is located between the antenna footings.

25X1D

Kind of Site: Radio broadcast antenna

Location: 1 nm east of Morro Castle, the eastern headland of Havana harbor

Coordinates: 23-09-18N 82-20-18W

25X1D

Description: The site consists of two guyed lattice masts which are approximately 300 feet high. Cable scars lead into a small transmitter building nearby.

Kind of Site: Radio broadcast antenna

Location: in the harbor dock area, 0.4 nm south of Regla, an eastern subdivision of Havana

Coordinates: 23-07-06N 82-20-00W

25X1D

Description: The site consists of a self-supporting steel lattice vertical radiator antenna tower approximately 350 feet high. There is a small tuning house and transmitter building at its base.

Kind of Site: Radio broadcast antenna

Location: in the center of Guanabacoa, an eastern suburb of Havana

Coordinates: 23-07-15N 82-19-00W

25X1D

Description: The site contains a single vertical radiator broadcast antenna with a small studio/transmitter building at the base.

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25X1

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25X1

Kind of Site: HF radio broadcast station

Location: 1.4 nm east of Guanabacoa, an eastern suburb of Havana
Coordinates: 23-07-30N 82-16-25W

25X1D

Description: The site consists of three vertical radiator towers, each about 600 feet high, and each with a tuning house at its base. The array is roughly triangular, giving a directive beam pattern. A small transmitter house and approximately three utility buildings are on the grounds nearby.

Kind of Site: Radio broadcast antenna

Location: 1.4 nm SE of Guanabacoa, an eastern suburb of Havana
Coordinates: 23-06-24N 82-17-00W

25X1D

Description: The site consists of a single omnidirectional guyed lattice antenna with a small transmitter house on the grounds.

MARBELLA

Kind of Site: Television transmission tower

Location: in the western environs of Marbella
Coordinates: 23-09-48N 82-09-18W

25X1D

Description: The site consists of a single tubular tower approximately 200 feet high with above-ground cable running into a transmitter house.

MATANZAS

Kind of Site: Radio broadcast antenna

Location: on a hillside 2 nm NNE of the center of Matanzas
Coordinates: 23-04-33N 81-34-03W

25X1D

Description: The site consists of two guyed steel lattice masts and two small transmitter buildings.

Location: in the NW environs of Matanzas
Coordinates: 23-03-18N 81-35-28W

25X1D

Description: The site consists of a single guyed steel lattice vertical radiator with a small transmitter building at its base.

PINAR DEL RIO

Kind of Site: Microwave facility

Location: 1.4 nm SW of the center of Pinar del Rio, in the military concentration area

Coordinates: 22-24-05N 83-42-48W

Description: The site consists of a Soviet R-400-type radio relay antenna and three electronics vans.

Kind of Site: Radio broadcast station

Location: 0.7 nm NE of the center of Pinar del Rio

Coordinates: 22-25-21N 83-41-06W

Description: This site, as the one below, consists of a self-supporting tower approximately 300 feet high with a studio/transmitter building at its base.

Location: 0.8 nm NE of the center of Pinar del Rio

Coordinates: 22-25-36N 83-41-12W

Description: Same as station above.

Kind of Site: TV or RCA-type microwave station

Location: 1.7 nm NE of the center of Pinar del Rio

Coordinates: 22-26-06N 83-40-24W

Description: The station consists of a single guyed lattice tower approximately 600 feet high with antenna atop the tower. The large size of the studio/transmitter building at the tower base suggests a television station, but RCA-type microwave towers have a similar appearance although the base building is much smaller.

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SANCTI SPIRITUS

25X1D

Kind of Site: **RCA-type microwave tower**

Location: on a hill 0.6 nm north of the center of town

Coordinates: 21-57-18N 79-26-36W

Description: The site consists of a tall (approximately 600 feet) guyed tower with a small multiplex-type building at its base.

Kind of Site: **Radio broadcast tower**

Location: on the NW edge of town

Coordinates: 21-56-18N 79-27-12W

Description: This site, as the one below, consists of a radio broadcast tower approxi-

mately 300 feet high with a small transmitter building at its base.

Location: on the SE edge of town

Coordinates: 21-55-12N 79-26-00W

Description: Same as station above.

SANTA CLARA

Kind of Site: **Microwave tower**

Location: on hill Cayo San Luis, 1.7 nm south of the center of Santa Clara

Coordinates: 22-22-18N 79-57-54W

Description: This is a very tall (approximately 600 feet) self-supporting steel lattice tower with an array of vertically polarized yagi antennas about two-thirds of the way up.

25X1D

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REFERENCES

DOCUMENTS

1. NPIC. R-1519/63, Cuban International Communication/Broadcast Stations, Oct 63 (SECRET)
2. NPIC. R-1047/63, Soviet Communications Facilities in Cuba, Jan 63 (SECRET)

REQUIREMENTS

- NSA. PO56/R14-63(C) (partial answer)
- NSA. PO56/R13-63(G)
- NSA. PO56/R90-62

NPIC PROJECT

- JN-343/62
- J-44/63 (partial answer)

Approved For Release 2003/12/18 : CIA-RDP78B04560A002100010004-1

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